## Claims

## 1. A compound according to formula (II):

$$R_1$$
 $R_2$ 
 $R_3$ 
 $R_4$ 
 $R_5$ 
 $R_6$ 
 $R_6$ 
 $R_6$ 

wherein:

wherein:

R1 = R', R'C(O), R'C(S), R'SO2, R'OC(O), R'NHC(O)



 $X_1 = O_2 S_1 NH_1 W_1 Y_2 = CH_1 N_2$ 

R" = single or multiple ring substitution combinations taken from:

H, C1-7-alkyl, C3-6-cycloalkyl, OH, SH, amine, halogen;

R2, R4 = H, C1-7-alkyl, C3-7-cycloalkyl;

R3 = C1-7-alkyl, C3-7-cycloalkyl, Ar- C1-7-alkyl;

R5 = C1-7-alkyl, halogen, Ar- C1-7-alkyl, C1-3-alkyl-CONR'''or  $R^{iv}$ ;

 $R^{IV} =$ 

A = N, CH; B = N. O. S. CH:

 $R^{vii}$  = absent when B = O, S; or  $R^{vii}$  = H, C1-7-alkyl when B = N, CH;

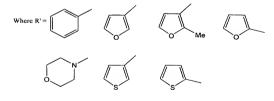
 $R^{vni} = O$ , C1-7-alkvl:

R6 = H, C1-7-alkyl, Ar- C1-7-alkyl, C1-3-alkyl-SO2-Rix,

C1-3-alkyl-C(O)-NHRix or CH2XAr:

and pharmaceutically acceptable salts thereof.

- 2. A compound according to claim 1, wherein R2 and/or R4 are hydrogen.
- 3. A compound according to claim 1, wherein R1 is R'C(O).



- 4. A compound according to claim 3, wherein R' is fur-3-yl or thien-3-yl
- 5. A compound according to claim 1, wherein R3 is n-butyl, t-butyl, 3-(2,2-dimethylpropyl), 4-(2-methylbutyl), 4-(3,3-dimethylbutyl), 4-(3,3-dimethyl-2-methylbutyl), 4-(3-methyl-2-methylbutyl) or 5-(2-methyl-3-methylpentyl).

- 6. A compound according to claim 5, wherein R3 is t-butyl, 3-(2,2-dimethylpropyl) or 4-(3,3-dimethyl-2-methylbutyl).
- A compound according to claim 1, wherein R5 is CH<sub>3</sub>, C<sub>2</sub>H<sub>5</sub>, CH<sub>2</sub>Ar, CH<sub>2</sub>CONH<sub>2</sub>, (CH<sub>2</sub>)<sub>2</sub>CONH<sub>2</sub>,



- 8. A compound according to claim 7, wherein R5 is CH3 or CH2CH3.
- 9. A compound according to claim 1, wherein R5 has (S) stereochemistry.
- 10. A compound according to claim 1, wherein R6 is H or CH<sub>2</sub>XAr.
- 11. A compound according to claim 1, wherein

R2 and R4 = H;

 $\label{eq:R3} $R3 = n$-butyl, t-butyl, 3-(2,2-dimethylpropyl), 4-(2-methylbutyl), 4-(3,3-dimethylbutyl), 4-(3,3-dimethyl-2-methylbutyl), 4-(3-methyl-2-methylbutyl), 5-(2-methyl-3-methylpentyl);$ 

 $R5 = CH_3, C_2H_5, CH_2Ar, CH_2CONH_2, (CH_2)_2CONH_2,$ 



R6 = H, CH2-X-Ar or a pharmaceutically acceptable salt thereof

## 12. A compound which is selected from the group consisting of:

Furan-3-carboxylic acid [3,3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)butyl]amide,

Furan-3-carboxylic acid [3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)butyl]amide,

 $\label{prop:linear} Furan-3-carboxylic acid \cite{C2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3-dimethylbutyl\cite{C3-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3-dimethylbutyl\cite{C3-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3-dimethylbutyl\cite{C3-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoylnethyl-4-oxo-tetrahydro$ 

Furan-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3,3-dimethylbutyl}amide,

Furan-3-carboxylic acid [3,3-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)butyllamide.

Furan-3-carboxylic acid [4-methyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)pentyl]amide,

Furan-3-carboxylic acid [4-methyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,

Furan-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-4-methylpentyl]amide,

Furan-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-4-methylpentyl}amide,

Furan-3-carboxylic acid [4-methyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,

Furan-3-carboxylic acid [3,3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)pentyl]amide,

Furan-3-carboxylic acid [3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,

Furan-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3-dimethylpentyl]amide,

Furan-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3,3-dimethylpentyl}amide,

Furan-3-carboxylic acid [3,3-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,

Furan-3-carboxylic acid [3,3,4-trimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)pentyl]amide,

Furan-3-carboxylic acid [3,3,4-trimethyl -1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,

Furan-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3,4-trimethylpentyllamide,

Furan-3-carboxylic acid {18-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]- 3,3,4-trimethylpentyl}amide,

Furan-3-carboxylic acid [3,3,4-trimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)pentyllamide,

Furan-3-carboxylic acid [3,4-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)pentyl]amide,

Furan-3-carboxylic acid [3,4-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,

Furan-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,4-dimethylpentyl]amide,

Furan-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamovl]-3,4-dimethylpentyl}amide,

Furan-3-carboxylic acid [3,4-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,

Furan-3-carboxylic acid [4,5-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamovl)hexyllamide.

Furan-3-carboxylic acid [4,5-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)hexyl]amide,

Furan-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-4.5-dimethylhexyllamide.

Furan-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-4,5-dimethylhexyl}amide,

Furan-3-carboxylic acid [4,5-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)hexyllamide,

Furan-3-carboxylic acid [3-methyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)-3-phenylbutyl]amide,

 $\label{prop:section} Furan-3-carboxylic acid \cite[3-methyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3-phenylbutyl] amide,$ 

Furan-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-vlcarbamoyl)-3-methyl-3-phenylbutyllamide.

Furan-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamovl]-3-methyl-3-phenylbutyl}amide.

Furan-3-carboxylic acid [3-methyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)-3-phenylbutyl]amide,

Furan-3-carboxylic acid [3,3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)-4-phenylbutyl]amide,

Furan-3-carboxylic acid [3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-4-phenylbutyllamide.

Furan-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3-dimethyl-4-phenylbutyl]amide,

Furan-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3,3-dimethyl-4-phenylbutyl}amide,

Furan-3-carboxylic acid [3,3-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)-4-phenylbutyl]amide,

Furan-3-carboxylic acid [3,3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)-5-phenylpentyllamide,

Furan-3-carboxylic acid [3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-5-phenylpentyl]amide,

Furan-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3.3-dimethyl-5-phenylpentyllamide.

Furan-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3,3-dimethyl-5-phenylpentyl}amide,

Furan-3-carboxylic acid [3,3-dimethyl-1S-(4-oxo-2-pytrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)-5-phenylpentyllamide.

Thiophene-3-carboxylic acid [3,3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)butyl]amide,

Thiophene-3-carboxylic acid [3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)butyl]amide,

Thiophene-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3.3-dimethylbutyllamide,

Thiophene-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3,3-dimethylbutyl}amide,

Thiophene-3-carboxylic acid [3,3-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)butyllamide.

Thiophene-3-carboxylic acid [4-methyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)pentyl]amide,

Thiophene-3-carboxylic acid [4-methyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)pentyllamide,

Thiophene-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-4-methylpentyl]amide,

 $Thiophene-3-carboxylic\ acid\ \{1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-4-methylpentyl\} amide,$ 

Thiophene-3-carboxylic acid [4-methyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)pentyllamide,

Thiophene-3-carboxylic acid [3,3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)pentyl]amide,

Thiophene-3-carboxylic acid [3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)pentyllamide,

Thiophene-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3-dimethylpentyl]amide,

Thiophene-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3,3-dimethylpentyl}amide,

Thiophene-3-carboxylic acid [3,3-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,

Thiophene-3-carboxylic acid [3,3,4-trimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)pentyl]amide,

 $Thiophene-3-carboxylic\ acid\ [3,3,4-trimethyl-1S-(2-ethyl-4-oxo-tetrahydro furan-3-ylcarbamoyl) pentyl] amide,$ 

Thiophene-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3,4-trimethylpentyllamide,

Thiophene-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]- 3,3,4-trimethylpentyl}amide,

 $Thiophene-3-carboxylic\ acid\ [3,3,4-trimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl) pentyl] amide,$ 

Thiophene-3-carboxylic acid [3,4-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)pentyl]amide,

 $Thiophene-3-carboxylic\ acid\ [3,4-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl) pentyl] amide,$ 

Thiophene-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,4-dimethylpentyl]amide,

 $\label{thm:linear_section} Thiophene-3-carboxylic acid \{1S-\{2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3,4-dimethylpentyl\}amide,$ 

Thiophene-3-carboxylic acid [3,4-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,

Thiophene-3-carboxylic acid [4,5-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)hexyl]amide,

Thiophene-3-carboxylic acid [4,5-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)hexyl]amide,

Thiophene-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-4.5-dimethylhexyllamide.

Thiophene-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-4,5-dimethylhexyl}amide,

Thiophene-3-carboxylic acid [4,5-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)hexyl]amide,

Thiophene-3-carboxylic acid [3-methyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)-3-phenylbutyl]amide,

Thiophene-3-carboxylic acid [3-methyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3-phenylbutyllamide.

Thiophene-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3-methyl-3-phenylbutyllamide.

Thiophene-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3-methyl-3-phenylbutyl}amide,

Thiophene-3-carboxylic acid [3-methyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)-3-phenylbutyllamide,

Thiophene-3-carboxylic acid [3,3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)-4-phenylbutyl]amide,

Thiophene-3-carboxylic acid [3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-4-phenylbutyl]amide,

Thiophene-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3-dimethyl-4-phenylbutyl]amide,

Thiophene-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3,3-dimethyl-4-phenylbutyl}amide,

Thiophene-3-carboxylic acid [3,3-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)-4-phenylbutyllamide.

Thiophene-3-carboxylic acid [3,3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)-5-phenylpentyl]amide,

Thiophene-3-carboxylic acid [3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-5-phenylpentyl]amide,

Thiophene-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3-dimethyl-5-phenylpentyl]amide,

Thiophene-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamovll-3.3-dimethyl-5-phenylpentyl}amide.

- Thiophene-3-carboxylic acid [3,3-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)-5-phenylpentyl]amide,
- 2-Methylfuran-3-carboxylic acid [3,3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)butyl]amide,
- 2-Methylfuran-3-carboxylic acid [3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)butyl]amide,
- 2-Methylfuran-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3-dimethylbutyl]amide,
- 2-Methylfuran-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxotetrahydrofuran-3-ylcarbamoyl]-3,3-dimethylbutyl}amide,
- 2-Methylfuran-3-carboxylic acid [3,3-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)butyl]amide,
- $2-Methylfuran-3-carboxylic\ acid\ [4-methyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl) pentyl] amide,$
- 2-Methyl furan-3-carboxylic acid~[4-methyl-1S-(2-ethyl-4-oxo-tetrahydro furan-3-ylcarbamoyl) pentyl [amide,
- $2-Methyl furan-3-carboxylic\ acid\ [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-4-methylpentyl] amide,$
- $2-Methylfuran-3-carboxylic\ acid\ \{1S-[2-(2-dimethylaminoethyl)-4-oxotetrahydrofuran-3-ylcarbamoyl]-4-methylpentyl\} amide,$
- 2-Methylfuran-3-carboxylic acid [4-methyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,
- 2-Methylfuran-3-carboxylic acid [3,3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)pentyl]amide,
- 2-Methylfuran-3-carboxylic acid [3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,
- 2-Methylfuran-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3-dimethylpentyl]amide.
- 2-Methylfuran-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxotetrahydrofuran-3-ylcarbamoyl]-3,3-dimethylpentyl}amide,
- 2-Methylfuran-3-carboxylic acid [3,3-dimethyl-18-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)pentyllamide.

- 2-Methylfuran-3-carboxylic acid [3,3,4-trimethyl-1S-(2S-methyl-4-oxotetrahydrofuran-3S-ylcarbamoyl)pentyl]amide,
- 2-Methylfuran-3-carboxylic acid [3,3,4-trimethyl –1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,
- 2-Methylfuran-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3ylcarbamoyl)-3,3,4-trimethylpentyl]amide,
- 2-Methylfuran-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxotetrahydrofuran-3-ylcarbamoyl]- 3,3,4-trimethylpentyl}amide,
- 2-Methylfuran-3-carboxylic acid [3,3,4-trimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,
- 2-Methylfuran-3-carboxylic acid [3,4-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)pentyllamide,
- 2-Methyl furan-3-carboxylic acid~[3,4-dimethyl-1S-(2-ethyl-4-oxo-tetrahydro furan-3-ylcarbamoyl) pentyl] amide,
- 2-Methylfuran-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,4-dimethylpentyl]amide,
- 2-Methylfuran-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxotetrahydrofuran-3-ylcarbamoyl]-3,4-dimethylpentyl}amide,
- 2-Methylfuran-3-carboxylic acid [3,4-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,
- 2-Methylfuran-3-carboxylic acid [4,5-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)hexyl]amide,
- 2-Methylfuran-3-carboxylic acid [4,5-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamovl)hexyllamide,
- 2-Methylfuran-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-4,5-dimethylhexyl]amide,
- $2-Methyl furan-3-carboxylic\ acid\ \{1S-[2-(2-dimethylaminoethyl)-4-oxotetrahydrofuran-3-ylcarbamoyl]-4,5-dimethylhexyl\} amide,$
- 2-Methylfuran-3-carboxylic acid [4,5-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)hexyl]amide,
- 2-Methylfuran-3-carboxylic acid [3-methyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamovl)-3-phenylbutyllamide.

- 2-Methylfuran-3-carboxylic acid [3-methyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3-phenylbutyl]amide,
- 2-Methylfuran-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3-methyl-3-phenylbutyl]amide,
- 2-Methylfuran-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxotetrahydrofuran-3-ylcarbamoyll-3-methyl-3-phenylbutyl)amide.
- $2-Methyl furan-3-carboxylic\ acid\ [3-methyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)-3-phenylbutyl] amide,$
- $2-Methyl furan-3-carboxylic acid \cite{A} 3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydro furan-3S-ylcarbamoyl)-4-phenylbutyl] amide,$
- 2-Methylfuran-3-carboxylic acid [3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-4-phenylbutyl]amide,
- 2-Methylfuran-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3-dimethyl-4-phenylbutyl]amide,
- 2-Methylfuran-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxotetrahydrofuran-3-ylcarbamoyl]-3,3-dimethyl-4-phenylbutyl}amide,
- 2-Methylfuran-3-carboxylic acid [3,3-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)-4-phenylbutyl]amide,
- 2-Methylfuran-3-carboxylic acid [3,3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)-5-phenylpentyl]amide,
- 2-Methylfuran-3-carboxylic acid [3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-5-phenylpentyl]amide,
- 2-Methylfuran-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3-dimethyl-5-phenylpentyllamide,
- 2-Methylfuran-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxotetrahydrofuran-3-ylcarbamoyl]-3,3-dimethyl-5-phenylpentyl}amide,
- 2-Methylfuran-3-carboxylic acid [3,3-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)-5-phenylpentyllamide.
- 1H-Pyrrole-3-carboxylic acid [3,3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)butyl]amide,
- 1*H*-Pyrrole-3-carboxylic acid [3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamovl)butyllamide.

- 1H-Pyrrole-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3-dimethylbutyl]amide,
- 1*H*-Pyrrole-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3,3-dimethylbutyl}amide,
- $IH-Pyrrole-3-carboxylic\ acid\ [3,3-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)butyl] amide,$
- $1 \mbox{$H$-Pyrrole-3-carboxylic acid [4-methyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)pentyl]amide,} \label{eq:pyrole-3-carboxylic}$
- 1H-Pyrrole-3-carboxylic acid [4-methyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)pentyllamide,
- 1H-Pyrrole-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-4-methylpentyl]amide,
- $1 \mbox{$H$-Pyrrole-3-carboxylic acid } \{1 \mbox{$S$-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-4-methylpentyl} a \mbox{$mide$,}$
- $1 \label{eq:helmonth} \begin{tabular}{ll} $1$ H-Pyrrole-3-carboxylic acid [4-methyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl) pentyl] amide, \end{tabular}$
- 1H-Pyrrole-3-carboxylic acid [3,3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)pentyl]amide,
- 1H-Pyrrole-3-carboxylic acid [3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,
- 1H-Pyrrole-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3-dimethylpentyl]amide,
- $1 \label{eq:hammon} \begin{tabular}{ll} $H$-Pyrrole-3-carboxylic acid $\{1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3,3-dimethylpentyl\}amide, \end{tabular}$
- 1*H*-Pyrrole-3-carboxylic acid [3,3-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,
- 1*H*-Pyrrole-3-carboxylic acid [3,3,4-trimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)pentyl]amide,
- 1*H*-Pyrrole-3-carboxylic acid [3,3,4-trimethyl –1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,
- 1*H*-Pyrrole-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3,4-trimethylpentyllamide,

- 1*H*-Pyrrole-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]- 3,3,4-trimethylpentyl}amide,
- 1*H*-Pyrrole-3-carboxylic acid [3,3,4-trimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,
- $\label{lem:helmonth} 1H\mbox{-Pyrrole-3-carboxylic acid } [3,4\mbox{-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)pentyl] amide,}$
- 1H-Pyrrole-3-carboxylic acid [3,4-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,
- 1*H*-Pyrrole-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,4-dimethylpentyllamide.
- 1H-Pyrrole-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3,4-dimethylpentyl}amide,
- 1*H*-Pyrrole-3-carboxylic acid [3,4-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,
- 1*H*-Pyrrole-3-carboxylic acid [4,5-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)hexyl]amide,
- $\label{lem:harmonic} IH\mbox{-Pyrrole-3-carboxylic acid [4,5-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)hexyl]amide,}$
- $1 \mbox{$H$-Pyrrole-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-4,5-dimethylhexyl]amide,} \label{eq:figure}$
- 1*H*-Pyrrole-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-4,5-dimethylhexyl}amide,
- 1*H*-Pyrrole-3-carboxylic acid [4,5-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)hexyllamide.
- 1H-Pyrrole-3-carboxylic acid [3-methyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)-3-phenylbutyl]amide,
- 1*H*-Pyrrole-3-carboxylic acid [3-methyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3-phenylbutyl]amide,
- 1H-Pyrrole-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3-methyl-3-phenylbutyl]amide,
- 1*H*-Pyrrole-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamovl]-3-methyl-3-phenylbutyl}amide.

- 1H-Pyrrole-3-carboxylic acid [3-methyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)-3-phenylbutyl]amide,
- $1 \label{eq:heavy-section} 1 \mbox{H-Pyrrole-3-carboxylic acid [3,3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)-4-phenylbutyl] amide,}$
- 1*H*-Pyrrole-3-carboxylic acid [3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-4-phenylbutyl]amide,
- 1*H*-Pyrrole-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-vlcarbamoyl)-3.3-dimethyl-4-phenylbutyllamide,
- 1H-Pyrrole-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyll-3,3-dimethyl-4-phenylbutyl}amide,
- 1*H*-Pyrrole-3-carboxylic acid [3,3-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)-4-phenylbutyl]amide,
- 1H-Pytrole-3-carboxylic acid [3,3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)-5-phenylpentyl]amide,
- $1 \label{eq:H-Pyrrole-3-carboxylic} 1 \mbox{H-Pyrrole-3-carboxylic acid } [3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-5-phenylpentyl] amide,$
- 1*H*-Pyrrole-3-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3-dimethyl-5-phenylpentyllamide,
- 1H-Pyrrole-3-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3,3-dimethyl-5-phenylpentyl}amide,
- 1*H*-Pyrrole-3-carboxylic acid [3,3-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)-5-phenylpentyl]amide,
- *N*-[3,3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)butyl]benzamide,
- N- [3, 3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl) butyl] benzamide,
- N-[1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3-dimethylbutyl]benzamide,
- N-{1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3,3-dimethylbutyl}benzamide,
- N-[3,3-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)butyl]benzamide,
- ${\it N-[4-methyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)} pentyl] benzamide,$

N-[4-methyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)pentyl]benzamide,

methylpentyl]benzamide,

N-{1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-4methylpentyl}benzamide,

N-[4-methyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)pentyl]benzamide,

N- [3, 3-dimethyl-1S-(2S-methyl-4-oxo-tetra hydrofuran-3S-methyl-4-oxo-tetra hydrofuran-3S-met

ylcarbamoyl)pentyl]benzamide,

N-[3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)pentyl]benzamide,

N-[1S-(2-carbamoylmethyl-4-oxo-tetra hydrofuran-3-ylcarbamoyl)-3, 3-dimensional properties of the pr

dimethylpentyl]benzamide,

N-{1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3,3-dimethylpentyl}benzamide,

 ${\it N-} [3, 3-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-pyrrolidin$ 

ylcarbamoyl)pentyl]benzamide,*N*-[3,3,4-trimethyl-1S-(2S-methyl-4-oxotetrahydrofuran-3S-ylcarbamoyl)pentyl]benzamide,

N-[3,3,4-trimethyl –1S-(2-ethyl-4-oxo-tetrahydrofuran-3-

ylcarbamoyl)pentyl]benzamide,

*N*-[1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3,4-trimethylpentyl]benzamide,

 $N-\{1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3,3,4-trimethylpentyl\}$  benzamide,

*N*-[3,3,4-trimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)pentyl]benzamide,

N-[3,4-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-

ylcarbamoyl)pentyl]benzamide,

dimethylpentyl}benzamide.

N-[3,4-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)pentyl]benzamide,

*N*-[1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,4-dimethylpentyl]benzamide.

 $N-\{1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3, 4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3, 4-oxo-tetrah$ 

N-[3,4-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)pentyl]benzamide,

N-[4,5-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-

ylcarbamoyl)hexyl]benzamide,

N-[4,5-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)hexyl]benzamide,

N-[1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-4,5-

dimethylhexyl]benzamide,

N-{1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-4,5-dimethylhexyl}benzamide,

N-[4,5-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamovl)hexyllbenzamide.

N-[3-methyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)-3-phenylbutyl|benzamide,

N-[3-methyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3-phenylbutyllbenzamide.

 $\label{local-constraint} $N-[1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3-methyl-3-phenylbutyl] benzamide,$ 

 $\label{lem:normalise} $$N-\{1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3-methyl-3-phenylbutyl}$$ benzamide,$ 

N-[3-methyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)-3-phenylbutyl]benzamide,

N-[3,3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)-4phenylbutyllbenzamide.

N-[3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-4-phenylbutyl]benzamide,

 $\label{lem:new_loss} $$N-[1S-(2-carbamoyl)-3,3-dimethyl-4-phenylbutyl] benzamide, $$ $$ IS-(2-carbamoyl)-3,3-dimethyl-4-phenylbutyl] benzamide, $$ $$ $$ IS-(2-carbamoyl)-3,3-dimethyl-4-phenylbutyl] $$ $$ IS-(2-carbamoyl)-3,3-dimethyl-4-phenylbutyl-4-pheny$ 

N-{1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3,3-dimethyl-4-phenylbutyl}benzamide,

N-[3,3-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)-4phenylbutyl]benzamide, N-[3,3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)-5-phenylpentyl]benzamide.

*N*-[3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-5-phenylpentyl]benzamide,

N-[1S-(2-carbamoyl)-3,3-dimethyl-5-phenylpentyl] benzamide,

 $N-\{1S-[2-(2-\mathrm{dimethylaminoethyl})-4-\mathrm{oxo-tetrahydrofuran-3-ylcarbamoyl}]-3,3-\mathrm{dimethyl-5-phenylpentyl}\}$  benzamide,

N-[3,3-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)-5-phenylpentyl]benzamide.

Morpholine-4-carboxylic acid [3,3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)butyl]amide,

Morpholine-4-carboxylic acid [3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)butyl]amide,

Morpholine-4-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3-dimethylbutyl]amide,

Morpholine-4-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3.3-dimethylbutyl}amide,

Morpholine-4-carboxylic acid [3,3-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)butyl]amide,

Morpholine-4-carboxylic acid [4-methyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-vlcarbamovl)pentyllamide.

Morpholine-4-carboxylic acid [4-methyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,

Morpholine-4-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-4-methylpentyl]amide,

Morpholine-4-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-4-methylpentyl}amide,

Morpholine-4-carboxylic acid [4-methyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,

Morpholine-4-carboxylic acid [3,3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)pentyl]amide,

Morpholine-4-carboxylic acid [3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,

Morpholine-4-carboxylic acid [18-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3-dimethylpentyl]amide,

Morpholine-4-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3,3-dimethylpentyl}amide,

Morpholine-4-carboxylic acid [3,3-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,

Morpholine-4-carboxylic acid [3,3,4-trimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)pentyl]amide,

Morpholine-4-carboxylic acid [3,3,4-trimethyl –1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,

Morpholine-4-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3,4-trimethylpentyl]amide,

Morpholine-4-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]- 3,3,4-trimethylpentyl}amide,

Morpholine-4-carboxylic acid [3,3,4-trimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,

 $Morpholine-4-carboxylic\ acid\ [3,4-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl) pentyl] amide,$ 

Morpholine-4-carboxylic acid [3,4-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,

Morpholine-4-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,4-dimethylpentyl]amide,

Morpholine-4-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3,4-dimethylpentyl}amide,

Morpholine-4-carboxylic acid [3,4-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)pentyl]amide,

Morpholine-4-carboxylic acid [4,5-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)hexyl]amide,

Morpholine-4-carboxylic acid [4,5-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)hexyl]amide,

Morpholine-4-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-4,5-dimethylhexyl]amide,

Morpholine-4-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-4,5-dimethylhexyl}amide,

 $Morpholine-4-carboxylic\ acid\ [4,5-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)hexyl] amide,$ 

Morpholine-4-carboxylic acid [3-methyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)-3-phenylbutyl]amide,

 $Morpholine \hbox{-}4-carboxylic\ acid\ [3-methyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3-phenylbutyl] amide,$ 

Morpholine-4-carboxylic acid [18-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3-methyl-3-phenylbutyl]amide.

Morpholine-4-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3-methyl-3-phenylbutyl}amide,

Morpholine-4-carboxylic acid [3-methyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)-3-phenylbutyllamide.

Morpholine-4-carboxylic acid [3,3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)-4-phenylbutyl]amide,

 $\label{lem:morpholine-4-carboxylic} Morpholine-4-carboxylic acid [3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-4-phenylbutyl] amide,$ 

Morpholine-4-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3-dimethyl-4-phenylbutyl]amide,

 $\label{lem:morpholine-4-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3,3-dimethyl-4-phenylbutyl} amide,$ 

Morpholine-4-carboxylic acid [3,3-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)-4-phenylbutyl]amide,

Morpholine-4-carboxylic acid [3,3-dimethyl-1S-(2S-methyl-4-oxo-tetrahydrofuran-3S-ylcarbamoyl)-5-phenylpentyl]amide,

Morpholine-4-carboxylic acid [3,3-dimethyl-1S-(2-ethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-5-phenylpentyl]amide,

Morpholine-4-carboxylic acid [1S-(2-carbamoylmethyl-4-oxo-tetrahydrofuran-3-ylcarbamoyl)-3,3-dimethyl-5-phenylpentyllamide.

Morpholine-4-carboxylic acid {1S-[2-(2-dimethylaminoethyl)-4-oxo-tetrahydrofuran-3-ylcarbamoyl]-3,3-dimethyl-5-phenylpentyl}amide,

Morpholine-4-carboxylic acid [3,3-dimethyl-1S-(4-oxo-2-pyrrolidin-1-ylmethyl-tetrahydrofuran-3-ylcarbamoyl)-5-phenylpentyl]amide, or a pharmaceutically acceptable salt thereof.

- A pharmaceutical composition comprising a compound according to any preceding claim and a pharmaceutically acceptable carrier.
- 14. A method of inhibiting the cysteine protease Cathepsin S which comprises administering to a patient in need thereof an effective amount of a compound according to claim 1.
- 15. A method of inhibiting the cysteine protease Cathepsin S which comprises administering to a patient in need thereof an effective amount of a composition according to claim 13.
- A compound of the formula IV

where

R1 is R'C(=O)- or R'-S(=O)2-R' is

$$X_{\bullet} = O, S, NH.$$

W, Y, Z = CH, N:

R" = single or multiple ring substitution combinations taken from:

H, C1-7-alkyl, C3-6-cycloalkyl, OH, SH, amine, halogen;

R3 = C1-7-alkyl, C2-C7 alkenyl, C3-7-cycloalkyl, Ar, Ar-C1-7-alkyl, Ar-C1-C7-alkyl;

R4 = H, C1-7-alkyl, C3-7-cycloalkyl; C2-7alkenyl, Ar, ArC1-7-alkyl;

R5 = C1-7-alkyl, hydroxy- or halo-substituted C1-C7alkyl, halogen, Ar-C1-7-alkyl, C0-3-alkyl-CONR3R4 or R<sup>™</sup>;

where n = 1-3, m = 1-3:

 $R^{v}$ ,  $R^{v_1} = H$ , C1-7-alkyl;

A = N, CH:

B = N, O, S, CH:

 $R^{vii}$  = absent when B = O, S; or  $R^{vii}$  = H, C1-7-alkyl when B = N, CH;  $R^{viii}$  = O, C1-7-alkyl;

R6 = H, C1-7-alkyl, Ar-C1-7-alkyl, C1-3-alkyl-SO2- $R^{tx}$ , C1-3-alkyl-C(O)-NH $R^{tx}$  or CH-XAr:

R<sup>ix</sup> is C1-7 alkyl, ArC1-7-alkyl or C3-6-cycloalkyl; and pharmaceutically acceptable salts thereof.

- 17. A compound according to claim 16, wherein R4 and/or R6 are hydrogen.
- 18. A compound according to claim 16, wherein R1 is R'C(O).
- 19. A compound according to claim 18,

- 20. A compound according to claim 19, wherein R' is fur-3-yl or thien-3-yl.
- 21. A compound according to claim 19, wherein R' is phenyl having multiple substitutions selected from C1-7 alkyl, C3-6-cyclocalkyl, OH, SH, amine and halogen.
- 22. A compound according to claim 21 wherein the substitutions are at the 3 and 4 position of the phenyl.
- 23. A compound according to claim 16 wherein R3 has the S stereochemistry.
- 24. A compound according to claim 23, wherein R3 is n-butyl, t-butyl, 3-(2,2-dimethylpropyl), 4-(2-methylbutyl), 4-(3,3-dimethylbutyl), 4-(3,3-dimethylbutyl), 4-(3-methyl-2-methylbutyl) or 5-(2-methyl-3-methylpentyl).
- 25. A compound according to claim 24, wherein R3 is t-butyl, 3-(2,2-dimethylpropyl) or 4-(3,3-dimethyl-2-methylbutyl).
- 26. A compound according to claim 16, wherein R3 is C3-C6 cycloalkyl.
- 27. A compound according to claim 26 wherein R3 is the side chain of L-cycohexylalanine or L-cyclopentylalanine.
- 28. A compound according to claim 16, wherein R5 is CH3, C2H5, CH2OH, CH2Ar, CH2CONH2, (CH2)2CONH2,

- 29. A compound according to claim 28, wherein R5 is CH<sub>3</sub>, CH<sub>2</sub>CH<sub>3</sub> or CH<sub>2</sub>OH.
- 30. A compound according to claim 16, wherein R5 has (S) stereochemistry.
- A compound according to claim 30, wherein the pyranone 4-bond also has the
   (S) stereochemistry.
- 32. A compound according to claim 16 wherein R5 has the (R) stereochemistry.
- 33. A compund according to claim 32 wherein the pyranone 4-bond also has the (R) stereochemistry.
- 34. A compound selected from the group consisting of

Furan-3-carboxylic acid (18)-[3,3-dimethyl-1-(3-methyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-butyl]-amide

Furan-3-carboxylic acid (1S)-[2-cyclohexyl-1-(3-methyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-ethyll-amide

(1S)-N-[3,3-Dimethyl-1-(3-methyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-butyl]-benzamide

(1S)-N-[2-Cyclohexyl-1-(3-methyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-ethyl]-benzamide

(1S)-N-[3,3-Dimethyl-1-(3-methyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-butyl]-4-

hydroxy-3-methyl-benzamide (1*S*)-*N*-[2-Cyclohexyl-1-(3-methyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-ethyl]-4-

hydroxy-3-methyl-benzamide Furan-3-carboxylic acid (1S)-[2-cyclopentyl-1-(3-methyl-5-oxo-tetrahydro-pyran-4-

Furan-3-carboxylic acid (18)-[2-cyclopentyl-1-(3-methyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-ethyl]-amide

 $\label{eq:constraint} (1S)\text{-}N\text{-}[2\text{-}Cyclopentyl\text{-}1\text{-}(3\text{-}methyl\text{-}5\text{-}oxo\text{-}tetrahydro\text{-}pyran\text{-}4\text{-}ylcarbamoyl})\text{-}ethyl]\text{-}benzamide$ 

(1S)-N-[2-Cyclopentyl-1-(3-methyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-ethyl]-4-hydroxy-3-methyl-benzamide

- Furan-3-carboxylic acid (1S)-[3,3-dimethyl-1-(3-ethyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-butyl]-amide
- Furan-3-carboxylic acid (18)-[2-cyclohexyl-1-(3-ethyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-ethyl]-amide
- (1S)-N-[3,3-Dimethyl-1-(3-ethyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-butyl]-benzamide
- (1*S*)-*N*-[2-Cyclohexyl-1-(3-ethyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-ethyl]-benzamide
- (1.5)-N-[3,3-Dimethyl-1-(3-ethyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-butyl]-4-hydroxy-3-methyl-benzamide
- (1S)-N-[2-Cyclohexyl-1-(3-ethyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-ethyl]-4-hydroxy-3-methyl-benzamide
- Furan-3-carboxylic acid (18)-[2-cyclopentyl-1-(3-ethyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-ethyl]-amide
- (1S)-N-[2-Cyclopentyl-1-(3-ethyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-ethyl]-benzamide
- (1S)-N-[2-Cyclopentyl-1-(3-ethyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-ethyl]-4-hydroxy-3-methyl-benzamide
- Furan-3-carboxylic acid (1S)-[3,3-dimethyl-1-(3-propyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-butyll-amide
- Furan-3-carboxylic acid (18)-[2-cyclohexyl-1-(3-propyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-ethyl]-amide
- (1S)-N-[3,3-Dimethyl-1-(3-propyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-butyl]-benzamide
- (1S)-N-[2-Cyclohexyl-1-(3-propyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-ethyl]benzamide
- (1S)-N-[3,3-Dimethyl-1-(3-propyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-butyl]-4-hydroxy-3-methyl-benzamide
- (1S)-N-[2-Cyclohexyl-1-(3-propyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-ethyl]-4-hydroxy-3-methyl-benzamide
- Furan-3-carboxylic acid (1*S*)-[2-cyclopentyl-1-(3-propyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-ethyl]-amide
- (1S)-N-[2-Cyclopentyl-1-(3-propyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-ethyl]-benzamide
- $\label{lem:condition} (1S)-N-[2-Cyclopentyl-1-(3-propyl-5-oxo-tetrahydro-pyran-4-ylcarbamoyl)-ethyl]-4-hydroxy-3-methyl-benzamide$
- and pharmaceutically acceptable salts thereof
- A compound according to claim 34 having the 3S,4S configuration.
- 36. A compound according to claim 34 having the 3R,4R configuration.

- 37. A pharmaceutical composition comprising a compound according to claim 16 and a pharmaceutically acceptable carrier.
- 38. A pharmaceutical composition comprising a compound according to claim 34 and a pharmaceutically acceptable carrier.
- A method of inhibiting the cysteine protease Cathepsin S which comprises administering to a patient in need thereof an effective amount of a compound according to claim 16.
- 40. A method for the preparation of a compound as defined in claim 16, comprising the steps of manipulating the protecting groups on a suitably protected carbohydrate derivative to effect deoxygenation at the anomeric postion, introducing the R5 substituent via a ketone functionality, for example by Wittig chemistry, introducing the 4-amino group by further manipulation of the remaining carbohydrate oxygen functionality to provide a protected 4-amino-5-substituted pyranone, N-extending the amine function using peptide chemistry and adding the R'C(=O) or R'S(=O)<sub>2</sub> capping group.
- 41. A method for the preparation of a compound as defined in claim 16, comprising the steps of diazotising an O-protected, acyclic carboxylic derivative of a suitably derivatised 3-amino-4-substituted lactone, cyclising the diazomethylketone produced to afford a protected 4-amino-5-substituted pyranone, N-extending the amine function using peptide chemistry and adding the R'C(=O) or R'S(=O)<sub>2</sub> capping group